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Nasty, Brutish and Short?; The Life Cycle of an Iron Age Roundhouse at Black Loch of Myrton, SW Scotland

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ABSTRACT

Excavations at Black Loch of Myrton, Dumfries & Galloway are revealing the very well-preserved remains of an Iron Age settlement, the wetland context ensuring that the timber structures have remained intact and that the detritus of daily occupation survives for us to pick apart and understand. One of the structures in this settlement is an exceptionally well-preserved roundhouse, the material remains of which have been subjected to a barrage of analyses encompassing the insect, macroplant, bone and wood assemblages, soil micromorphology, faecal steroids, radiocarbon-dating and dendrochronology. These will enable us to address some of the key issues regarding the life cycles of Iron Age roundhouses, from conception and construction, use of internal space, nature of occupation and likely function, through to abandonment. Critically, we are now able to view that life cycle through the lens of a tightly-defined chronology bringing us close to the '… short-term timescales of lived reality' [Foxhall, L. 2000. "The Running Sands of Time: Archaeology and the Short-Term." *World Archaeology* 31 (3): 484–498].

KEYWORDS

Roundhouse; preservation; floor surfaces; occupation debris; short chronology; abandonment processes; life cycles

Introduction

Roundhouses are a ubiquitous feature of the Iron Age landscape throughout the UK but in general they survive primarily as ground plans from which we must extrapolate the building upwards, furnish and inhabit it. With very few exceptions, ie the lake villages of Glastonbury and Meare in Somerset (Coles and Minnitt 2000), and the settlement at Ballycagen Lough, Isle of Man (Bersu 1977), the UK database consists of roundhouses in dryland settings, where only inorganic evidence tends to survive. The degree of organic preservation in ST2, one of the roundhouses in the Iron Age wetland settlement currently under excavation at Black Loch of Myrton, Dumfries & Galloway is such that its evidence offers new insights for its dryland equivalents.

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This paper is very much an interim statement about a single roundhouse within a larger settlement which is still under excavation and is therefore primarily concerned with the 'prosaic issues of construction, subsistence and chronology' (Parker Pearson and Sharples 1999, 16) rather than with the meta-narratives that have surrounded roundhouse studies over the past few decades (critiqued in Pope 2007). While acknowledging that, to fully contextualise these buildings, there are issues other than the pragmatic to consider (and some consideration is given in the discussion below) this paper aims primarily to present the evidence on which a meta-narrative can eventually be developed.

The context for the current excavations at Black Loch of Myrton (BLM) is presented, together with the excavated evidence from ST2. Brief summaries of the chronological framework, the evidence for environmental conditions within the structure, the use of space and final abandonment follow. The implications of the short chronology for the nature of the occupation on the settlement and the possible role of the settlement in the community are explored, together with its impact on our modern perceptions of prehistoric time.

Context

The presence of an archaeological site at BLM has been known since the nineteenth century when the landowner Sir Herbert Maxwell carried out some limited excavation there (Munro 1885, 83). Robert Munro, the Scottish antiquarian responsible for much of Scotland's early crannog research, recorded that intervention and BLM was subsequently listed as a crannog. The site came back to light in 2010 when oak posts uncovered during drainage operations subsequently produced Iron Age radiocarbon dates, and excavations began in 2013.

These excavations, which are ongoing, have revealed that the site is not a crannog, in that it is not an artificially constructed island (Crone and Cavers 2015, 2016). Rather, the settlement had been built on a natural island of peat which projected out into the shallow loch and which was connected to the shore by a natural causeway (Figure 1).

Based on the current stratigraphic and chronological evidence there were at least three episodes of building activity on the island. Episode 1 consisted of a settlement of three roundhouses, ST1, ST2 and ST5 clustered in the northern half of the island around the end of a log trackway which was aligned on the causeway off the island (Figure 1). This settlement was protected by a palisade of closely set alder logs around its southern perimeter. The chronological evidence places this episode in the latter half of the 5th century BC (below). Episodes 2 and 3 are currently dated by radiocarbon alone and both occurred sometime in the 4th to 3rd centuries BC. In Episode 2, settlement expanded out into the southern half of the island, with the construction of a new defensive perimeter (Figure 1), with ovens and other structures possibly associated with food processing activities built just inside it.

In Episode 3 an earthen rampart and post-built palisade were constructed over these structures. Radiocarbon dates for the two roundhouses in the southern half of the site, ST3 and ST4, place them in either Episode 2 or 3. ST2 was abandoned at the end of Episode 1 but this part of the island continued in use. Deposits and features which have been radiocarbon-dated to Episode 2/3 lie over ST2 (Figure 13); the hearth mound clearly remained prominent after the abandonment of the structures and another stone-built hearth was constructed on top of it (Figure 6), although we do not have

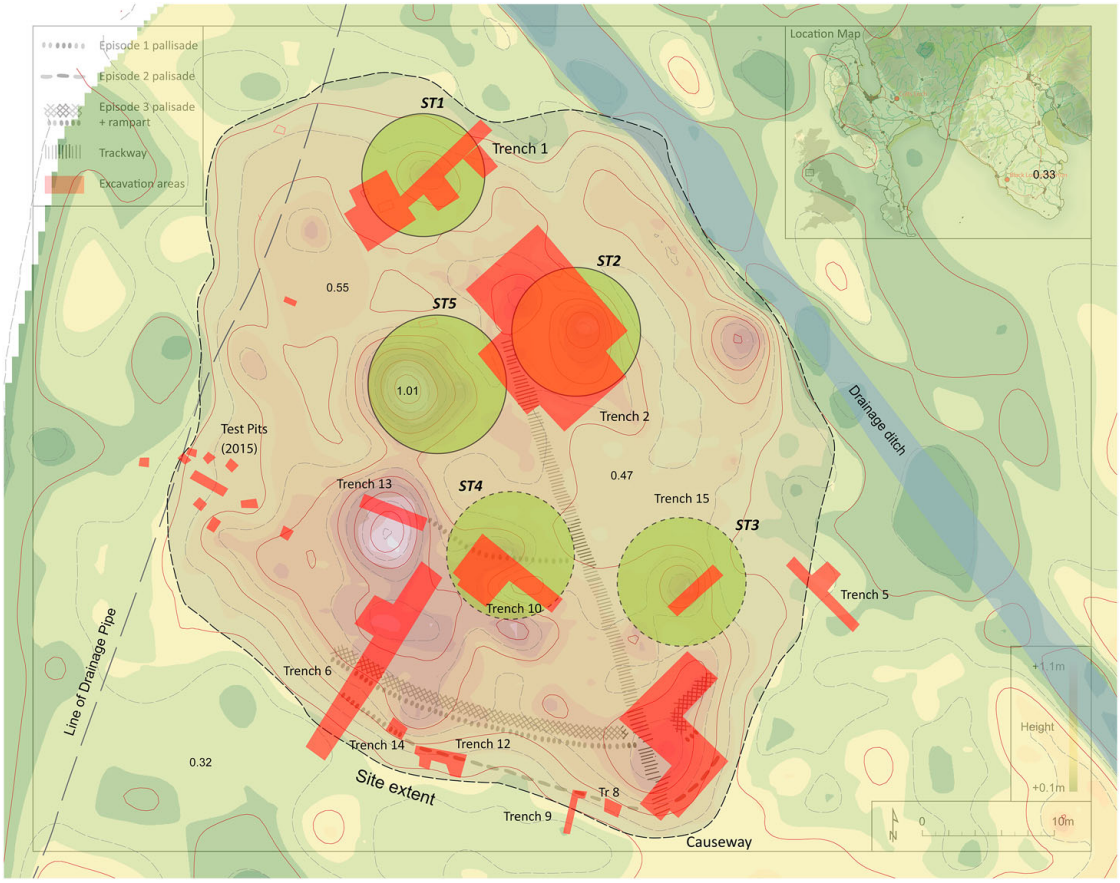

Figure 1. Topographic survey of the island, showing excavation trenches and structures.

evidence for an associated superstructure. Thus, although in a wetland setting the format of the settlement at BLM is that of a palisaded enclosure, its roundhouses and repeated refurbishment and elaboration of the enclosing palisades and banks a familiar footprint in the settlement patterns of Iron Age lowland Scotland (Cowley and Brophy 2001).

The Superstructure

ST2 is around 12.8 m in diameter externally and would have had an internal area of 128.68 m^2 (Figure 2). The building is truly circular, i.e. remarkably symmetrical around a point which lies at the very centre of the Phase 1 hearth. It was built with a N/S aligned axis bisecting the central hearth and the entrance, which faces S towards the causeway onto the island. Evidence for the superstructure of the building consists of a double outer wall, a post-ring linked by tangential sillbeams, and an inner ring of posts circling the hearth. There is no evidence that these elements of the structure were ever replaced or refurbished; they represent a single construction episode.

As the house was being built, small rounded white quartzite pebbles, single as well as in caches, were placed under the floors, tucked in under the wickerwork walls and around the base of posts. In the absence of a demonstrable practical function, these are interpreted as foundation deposits, symbolic acts perhaps intended to bring good fortune to the house and its occupants. At the near-contemporary settlement on Cults Loch 3 crannog, wooden artefacts, as well as a single cache of quartzite pebbles were found

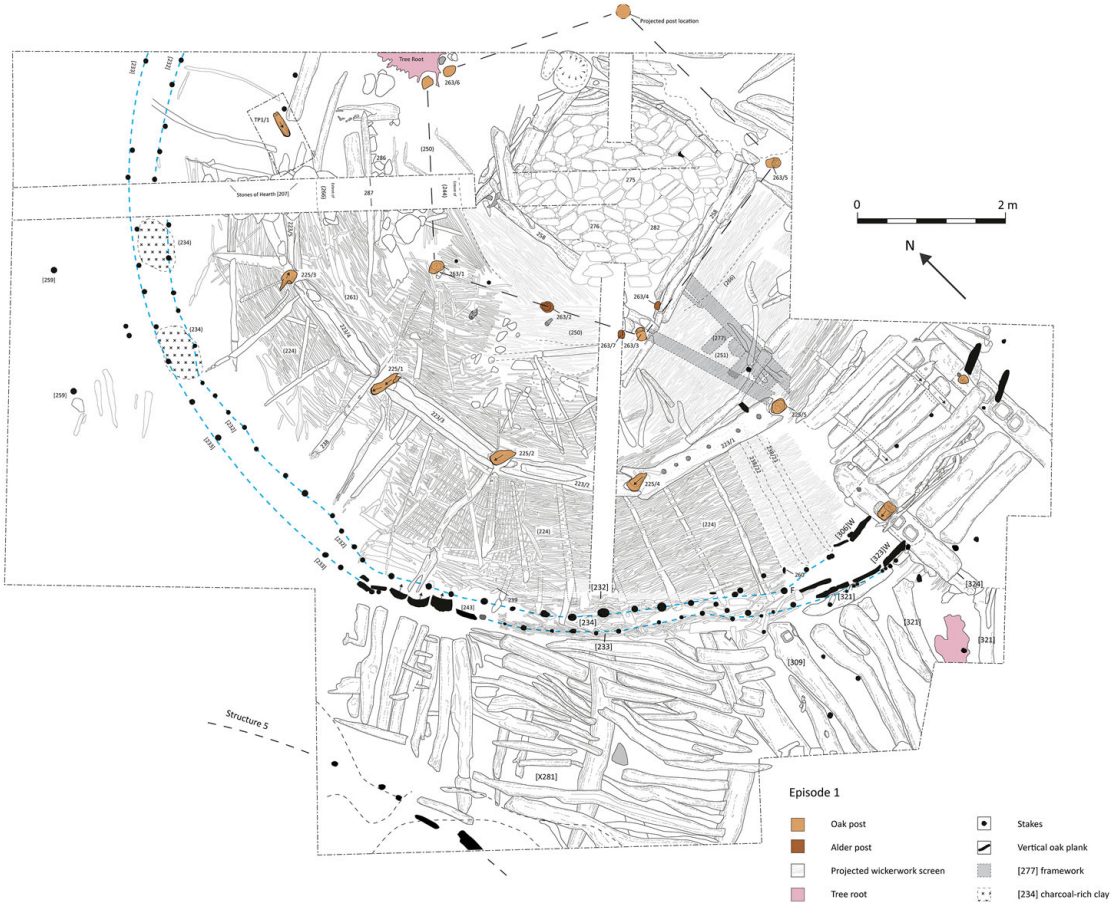

Figure 2. Plan of Structure 2, Phase 1.

under the floors of the houses and were interpreted as votive deposits rather than incidental losses (Cavers and Crone 2018, 101–102). A cache of quartz pebbles was also found in the base of a posthole in a roundhouse at Ballanorris, Isle of Man (Mytum 2012, 5). Pope (2003, 382) concluded that ritual deposition prior to or during construction was not common in later prehistoric roundhouses but on sites where *in situ* walls and floors have survived deposits, primarily of bone and pottery have been found tucked under walls or in wall core material, ie in the Phase 6 roundhouses at Broxmouth, East Lothian (Armit and McKenzie 2013, 151, 184) and in the wheelhouse at Cnip, Lewis (Armit 2006, 18, 32). The practice of votive deposition before and during construction was probably more extensive than the evidence suggests, but similar depositions on terrestrial roundhouses may have been organic in nature and have not survived.

The Structure of the Outer Wall

The outer wall of the roundhouse is a double-skinned construction, consisting along most of its circuit of two wickerwork walls set 0.4 m apart. The stakes of the wickerwork walls are primarily hazel (64%), with smaller amounts of birch (14%), ash (14%), and alder (7%). The wickerwork, made entirely of hazel, had survived up to six courses high around the stakes along the W circuit. No evidence for clay daub on the outer faces of the wickerwork walls was observed and, as at least some trace of a mineral deposit would have survived and been visible against the predominantly organic matrix, we argue that the walls were not daubed.

Figure 3. The oak plank façade to the left of the entrance. Courses of the wickerwork wall can be seen to the left, sitting just in front of the plank.

Along the W circuit, the outer wall has been supplemented by a line of six oak planks (Figure 2 – context 243), inserted vertically into the ground forming a near contiguous line some 2 m long. Dendrochronological analysis shows that one of these planks had been cleft from the same tree as one of those in the entrance façade so this line of planks must represent part of the original construction and not a later renovation.

Oak planks had also been inserted into the outer wall and inner walls at the junction with the entrance. The planks sat tightly inside the outer stakeline, the wickerwork walling continuing around in front of the planks (Figure 3). They had been cleft from large, mature trees with estimated diameters of between 0.6 and 0.75 m, some of which would have been over 500 years of age when felled. Their felling, transportation and working must have represented a major investment in energy and resources. The line of planks would have strengthened what is usually the weakest structural section of a roundhouse, the junction between wall and entrance, while at the same time providing an impressive façade flanking the entrance into the house.

It is assumed that the cavity between the double-skinned wall would have been filled with some form of insulation. Between the walls on the W circuit, traces of a charcoal-smeared orange clay (Figure 2 – context 234) were observed over the lowermost withies, while along the N circuit there were discrete patches of a charcoal-rich, yellowish clay between the walls. Both deposits contained small amounts of food debris while the insect assemblage contained typical house fauna as well as fauna associated with decaying plant debris and foul organic matter. This could either mean that these insects have crept into the wall cavity from the internal floor deposits or that occupation litter was deposited within the cavity. Both also contained large quantities of carbonised hazel roundwood, so either the cavity was filled with bundles of brushwood and withies, or this charcoal represents the burnt remains of the wickerwork wall (see *Abandonment* below).

The Outer Post-Ring and Sillbeams

The outer post-ring (diam 8.8 m) lies some 2 m inside the inner line of the outer wall. Over the projected circumference of 27.65 m for the whole post-ring there would have been 14

Figure 4. One of the oak posts of the outer post-ring displaying a concave base (orthographic view derived from photogrammetry). The roughly squared hole piercing one side of the post is a tow-hole which would have been used to drag the log from woodland to settlement. Many of the logs used in the settlement displayed these holes.

posts, of which six have been exposed. All the exposed posts have been fashioned from oak logs and all but one display concave bases which were presumably designed to fit over the radial logs of the sub-floor (Figure 4).

This may have been an innovation designed to address the issues of building on an unstable surface by allowing the building to flex but the use of concave-based posts might also explain the absence of post-rings in many other large roundhouses, as well as the often irregular pattern of postholes that they display (cf Armit and McKenzie 2013, 179–180)

In between each post pair was a large alder sillbeam which had been laid directly over the wickerwork sub-floor. Most of these timbers were too decayed to preserve original carpentry details but the best-preserved example had been roughly squared, with five stake-holes cut along its length and shaped at either end to fit snugly around the upright posts, utilising a branch junction at one end to form this joint (Figure 5). These sillbeams would have created a major concentric division within the building (see below) but like the concave posts, they would have left no earthfast footprint.

Figure 5. Sillbeam 223/1 *in situ* displaying stake holes and jointing around the posts. The stakes of the outer wall are visible to the left. The wickerwork screens formed the sub-floor of the Phase 1 building.

The Inner Post-Ring

Some 2 m inside the outer post-ring (and thus with a diameter of 4.8 m), lay another circle of five oak posts which does not lie concentrically around the hearth mound. The oak posts included two with flat bases, one with a concave base, and two closely set posts with pencil-tips. Despite these differences in style the dendrochronological analysis demonstrates that all the sampled oak posts were contemporary. The variation in base design presumably reflected the functions of the posts around the circle. The two flat-based oak posts sat on either side of the hearth where it abutted the entrance structure, while the closely-set pencil-tipped oak posts lay behind the hearth on an axis that bisected the hearth and entrance, and may have provided an anchoring function for this inner ring. The oak posts were all spaced roughly 3 m apart (treating the closely-set posts as one); a conjectured sixth post lying to the E of the hearth and equidistant from its neighbours would have formed a five-sided polygon with the S edge of the hearth forming the S side of the polygon.

The Central Hearth and Associated Structures

The focal point of the structure was the stone hearth which lay at its very centre; the outer wall and the post-ring all lie concentric to the central point of the original hearth. However, as described above the polygonal arrangement of posts appears to be positioned to one side of the hearth; in this arrangement anyone entering the house would be brought immediately to the edge of the hearth while creating a more secluded space behind the hearth. The hearth was rebuilt twice during the lifetime of the house, creating a

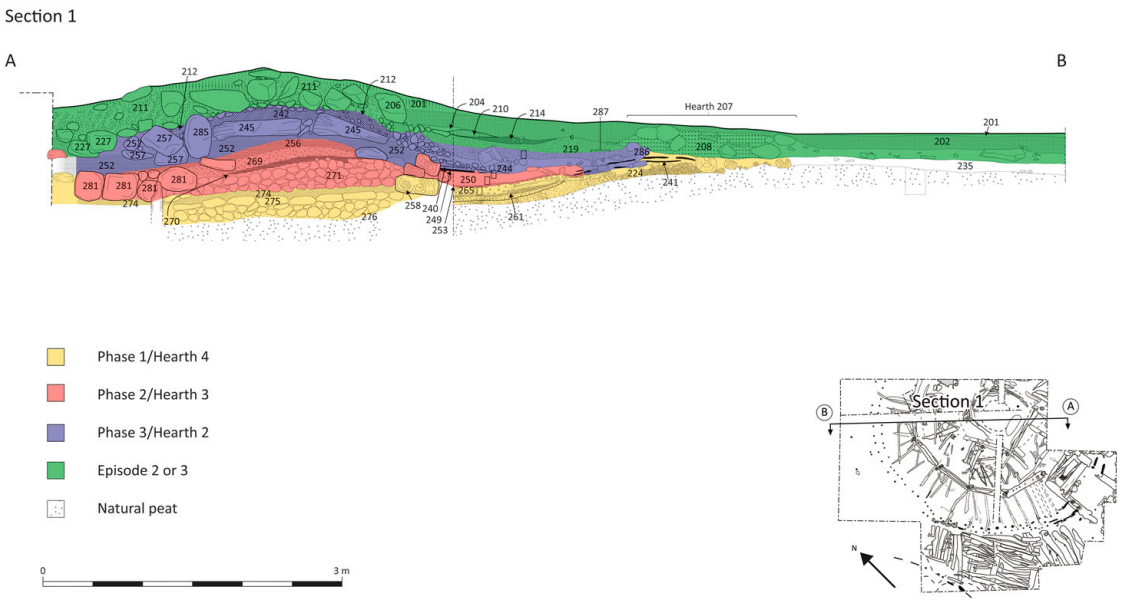

Figure 6. Section through the hearth mound, showing the hearths stacked immediately over each other, and the degree to which they have sunk into the peat.

mound which has survived to this day (Figure 6). The associated floor surfaces and entrance structure were also refurbished every time that the hearth was rebuilt.

Phase 1

Hearth 4

The primary hearth was built directly on the peat surface. It consisted of a mound of loose cobbles up to 0.25 m deep topped by a surface of flat stones and was probably contained within the timber framework seen more clearly in the Phase 2 hearth (Figures 2 and 6).

Associated Surfaces

A sub-floor structure had been laid down over a foundation layer of bracken and reeds. Stout radial alder logs, averaging 0.15 m in diameter, were laid down first. A sub-floor of roughly made wickerwork screens was then laid over the radial logs, covering the penannular area between the inner wall face and the outer post-ring (Figures 2, 5 and 7 – context 224). The sillbeams between the outer post-ring were laid down directly over the wickerwork, indicating that it was indeed a sub-floor, and not exposed for long, as confirmed by micromorphological analysis. In the central area, within the outer post-ring and around the hearth wickerwork panels had also been laid down over the primary foundation layer but subsidence in this area and subsequent build-up of deposits has left the wickerwork in a more jumbled condition. Micromorphological analysis indicated that bracken and other plant material was laid down with the wickerwork around the hearth in a saturated environment, suggesting that this was an area of the house which frequently subsided below the water table. Lice, most likely associated with animal hides were found in this deposit.

The sails of the horizontal wickerwork screens are spaced between 0.6 and 0.8 m apart and are aligned radially within the structure, the withies lying tangentially. There may have

Figure 7. The full sequence of floor structures and surfaces is visible in this section. The Phase 1 wickerwork sub-floor lies at the base of the section, over the natural peat. Above this is [251], the plant litter floor surfaces, seen here as a grey-green layer. The Phase 2 brushwood sub-floor lies over this, followed by [250], the plant litter floors of this phase. The carbonised upper surface of this floor is visible, as is the orange clay laid immediately over it in Phase3. The light brown peaty clay which covered the trench probably contains the mineralised remains of later organic floors belonging to this phase.

been numerous screens, but they could not be identified individually. However, one area, approximately 2 m wide and lying around the W circuit, displayed a very different weave, more like basketry with evenly spaced horizontals and verticals, and probably represents an individual screen. All the sampled wickerwork was made from a mixture of alder and hazel withies.

The active floor surface associated with Hearth 4 is [251], a deposit of compacted plant litter up to 0.3 m thick within the post-ring and [221A], a similar but thinner deposit lying between the post-ring and the outer wall (Figure 7). The multiple floor surfaces identifiable within [251] consisted of layers of bracken, sedges, rushes and possibly cereal straw, into which food debris, possibly faecal matter and soil from outside had been trampled. These anthropic indicators increased towards the top of the deposit; this might reflect a change in function in this part of the house during the use of this floor, with less cleaning taking place. However, the insect fauna suggests a relatively clean environment, with relatively low concentrations of house, stable and lesser dung flies present. A more trampled version of this floor surface is probably represented by context [265], a deposit identified close to the hearth which contained layers of compacted plant matter, predominantly bracken with some roundwood, alternating with lenses of mineral sediment. These lenses might represent trample out from the hearth or the deliberate spreading of sand to cover up a dirty and/or wet floor.

Deposit [221A] was highly compacted and, like the other floor deposits consisted primarily of layers of bracken, sedge and rush, the dominant plant type varying from top (sedge) to bottom (bracken), possibly reflecting seasonal availability. Unlike the other floor deposits there was little to no evidence of domestic debris, suggesting that this area of the house, the annulus between the post-ring and outer wall, was kept cleaner than the area around the hearth.

The Entrance

The sides of the primary entrance structure were defined by two large radial logs 2.2 m long and set 1.70 m apart (Figures 2 and 8). A row of three closely-set mortices penetrated both logs, just at the point where the outer wallfaces met the entrance; these housed squared oak posts which would have formed the terminals of the outer wall and also lined the passage into the house. The inner ends of these radial sleeper beams had been dressed flat but the outer ends had not been worked, the bark still in place.

The space between the radial logs had been filled with tangential logs. The outer five tangential logs had not been worked, the bark still in place, but the inner three logs had been treated very differently. Their upper surfaces had been dressed flat and they had been jointed together by laying a small roundwood pole into narrow grooves cut across the three logs. The poles appear to have been dowelled into a large tangential log which sat above the level of the entrance surface. This jointing would have prevented sideways movement, while the surfaces of the logs and of the inner ends of the sleeper beams may have been flattened so that planks could be laid across them. The ends of the radial logs projected some 0.7 m beyond the circuit of the outer wallface so there may have been a porch structure.

A thick deposit of brushwood and small branches covered the surface of the tangential logs. A surface like this would certainly have been necessary over the outermost undressed logs, but if there had been a plank floor over the inner logs then this had been removed before this deposit was laid down. It may have been laid down to bring the surface of the entrance level with the sillbeam. There is a significant step down at the junction between the sillbeam and the entrance structure and this appears to have been a problematic area which required constant re-levelling. Re-used oak timbers were laid down immediately in front of and parallel to the sillbeam, together with bundles of small branches and brushwood.

Phase 2

Hearth 3

Hearth 3 is contained within an approximately square framework 2.8 m × 2.6 m constructed of roughly squared oak and alder timbers stacked two high on all sides and pinned in place by pencil-tipped alder stakes at the corners. Within this framework stones and cobbles had been piled some 0.35 m high piled over the final deposit in the Phase 1 hearth (Figure 6). A patch of thin clay 1.6 m in diameter, formed the hearth surface but it did not fully cover the cobble mound below. The build-up of deposits within Hearth 3 suggests a sequence in which mineral soils were sometimes thrown on to extinguish fires, thin lenses of hearth and food debris surviving in between.

Associated Surfaces (**Figures 5** and **6**)

The floors around the hearth were also resurfaced. Within the post-ring large radial alder logs and a layer of small branchwood were laid down over the old plant litter floor [251] (Figure 7 – context 253). Around the S and W sides of the hearth a thick gritty grey clay was spread out abutting the timber framework of the hearth and a similar spread of grey clay had also been laid down between the post-ring and the outer wall in the SW segment of the house. These deposits were free of fuel and food debris and probably represent

Figure 8. The Phase 1 entrance structure, looking into the building, with the oak planks of the outer wall still *in situ* where they abut the entrance.

minerogenic deposits deliberately brought onto the site for resurfacing. Over these surfaces a deposit of plant litter up to 0.1 m thick, [250] within the post-ring and [221B] around the periphery, had built up. These represent the active floor surface of Phase 2 and consisted primarily of layers of bracken, sedges and rushes (Figure 9), with bracken comprising up to 50% of the plant matter in some places. There was very little domestic debris in [250] suggesting that the active, and therefore dirty, surface was removed every time the floor was refurbished with a new covering of plant litter. This deposit did contain the highest number of ectoparasites present in any deposit from ST2, both lice (including cattle lice, *Bovicola bovis*) and the human flea, *Pulex iritans*. [221B] also contained a large number of domestic flies (*Mustica domestica*).

Immediately overlying [250] in large patches within the post-ring was a layer of carbonised plant litter between 0.03 and 0.04 m thick which is probably the burnt upper surface of [250] (Figure 7 – context 249). The survival of considerable quantities of charcoal, charred and reddened plant and fine mineral material suggests a relatively low temperature fire. It seems most likely that a spillage from the hearth caused the fire, which was prevented from spreading into the outer area beyond the post-ring by a screen of some sort. This conflagration probably brought this phase of activity in the house to an end.

The Entrance

Levelling deposits were laid over the Phase 1 entrance structure prior to construction of a new entrance framework. Layers of rushes, sedges and bracken were laid down to level up the area in front of the sillbeam. This area appears to have continued to cause problems because there is evidence for multiple episodes of resurfacing within this deposit; there

Figure 9. Thin section of [221B] showing compressed layers of bracken and reeds/sedge.

are bands of coarse minerals and anthropic materials between the plant layers which were probably trampled in, while compression of the plant matter provides further evidence of this process. Further out from the sillbeam a layer of redeposited peat, some 0.2 m thick in places was laid over the Phase 1 brushwood surface and then the new timber framework was built over the peat.

This framework was much more shoddily built than the Phase 1 entrance. New radial logs were laid directly over the Phase 1 logs (Figure 11). These radials were fashioned from undressed half-logs of alder, the curved surface of the log uppermost; it is possible that they are the two halves of the same log.

The radial logs were much longer than those in the Phase 1 structure; the W sleeper was 3.4 m long and extended 1.2 m beyond the circuit of the outer wallface. Mortices had also been cut into the beams but these were less carefully crafted than those in the Phase 1 structure. A single long mortice spanned the position of the mortices below. In both mortices squared oak posts had survived *in situ*; these would have formed a neat terminal to the double outer wall.

Thin oak planks spanned the width of the entrance, their ends resting on the radial logs. This surface lay just inside the inner wall, covering that part of the entrance which lay in the interior of the house. Beyond these, in alignment with the inner plank wall, a line of rounded stones had been laid out across the width of the entrance and then covered with an orange clay; the stones may have been designed to act like a rumble drain across the entrance at the point where subsidence appears to have been a constant

problem. The surface of the entrance from this point out to the ends of the sleeper beams consisted of bundles of alder brushwood laid down just inside of, and parallel to the morticed radials; these were then covered with bundles laid tangentially across the entrance.

Phase 3

Hearth 2

In the final refurbishment of the house, the hearth was reduced to approximately half its original area from *circa* 7 m^2 in Phase 2–3.5 m^2 (Figure 7). A loosely constructed kerb of stones was laid just within and over the existing Phase 2 timber framework and a layer of clay, flecked with charcoal and burnt bone was spread over the surface area within the timber framework to form the foundation for Hearth 2. Within this outer kerb a line of four large oval boulders formed an inner kerb around the S edge which may have originally encircled the hearth and within this large greywacke slabs formed the working surface (Figures 7 and 10).

Associated Surfaces

The carbonised plant litter surface which had brought the Phase 2 occupation of the structure to an end was covered with a layer of orange clay up to 0.05 m thick which was found in extensive patches all around the hearth (Figure 7 – context 240). The boundary between the carbonised plant litter and the orange clay is sharp suggesting that the latter was laid down quickly after the burning event. The presence of small fragments of burnt bone, ash and possible herbivore coprolites in the clay represents trampled domestic debris.

A deposit of fire-shattered stones in a loose peaty matrix with frequent wood fragments, charcoal and burnt bone, up to 0.2 m thick in places, lay around Hearth 2. This

Figure 10. Hearth 2.

Figure 11. The Phase 2 entrance structure, looking into the building.

deposit resembles hearth debris which may have been spread out as a foundation surface for a plant litter floor. The organic floors associated with this final occupation may have become mineralised and lie within the base of a deposit of smooth, light brown organic-rich clay which covered much of the excavated area. Radiocarbon dates taken at the top, middle and bottom of this deposit suggest that it developed throughout Period 1 to Period 2/3 (Figure 11; R-Dates 70182, 68508 & 68509), and probably incorporates later post-abandonment activity in its upper layers. In its lower layers micromorphological analysis has identified layers of trampled plant litter and this is interpreted as occupation debris which has built up within the structure and then has decayed and become mineralised above the water table. Of particular note is that, at the base of the sample closest to the hearth there is evidence of hearth debris and *in situ* burning which may relate to a localised burning event associated with the end of the Phase 3 occupation.

The Entrance

The final phase in the entrance area consisted of resurfacing rather than reconstruction and probably happened rapidly after Phase 2 because the new surfaces lay directly over the earlier ones with no evidence for any build-up of debris. The resurfacing consisted of a rectangular area of small alder logs, a 'welcome mat', which had been laid directly over the oak plank surface of the previous entrance (Figure 12). It was 2.2 m by 1.4 m, and was defined by two radial logs between which a continuous surface of tangential logs had been laid.

The surface of the entrance beyond the 'welcome mat', between the terminals of the outer wall, consisted of a deposit of compacted plant litter, brash and brushwood some 0.18 m thick in places. This deposit probably represents multiple episodes of resurfacing;

Figure 12. The Phase 3 entrance structure, looking into the building.

it displays weak banding consistent with a gradual build-up of plant layers and contains trace amounts of anthropic materials such as charred hazelnut shell and burnt bone which probably represents trample. Sedge probably made up a large component of the material used in the surface. The insect fauna was dominated by species that may have been imported with the materials used to construct the surface as well as outdoor species that may have crept in. House fauna made up a small component, suggesting, along with the almost complete absence of domestic debris, that the entrance area was kept very clean.

The Chronology of Construction and Occupation

The construction of ST2 has been precisely dated using dendrochronology, while the duration of occupation has been explored using Bayesian analysis of a suite of radiocarbon dates. Almost all the main vertical components in ST2 were oak; the posts of the inner and outer post-rings, and the vertical planks of the outer wall. A 363-year site chronology, incorporating 20 of the oak sequences from ST2 was dated to 797 BC – 435 BC. Eleven of the dated oaks had retained the bark edge and so it was possible to specify precise felling dates; eight of the oaks were felled in the spring/summer of 435 BC while three were felled a little earlier in the winter/spring of 437/436 BC. There is no physical evidence for the replacement of any of the structural components and this is borne out by the dendrochronological evidence. It suggests that ST2 was built in 435 BC but preparation for construction had begun a year to 18 months previously. Dendrochronological analysis of alder and ash wood from the structure also indicates felling over a 2-year period.

A suite of 22 radiocarbon dates was also obtained from the stratified sequence of hearths and floor deposits, and from the deposits sealing the structure (Figure 13). The

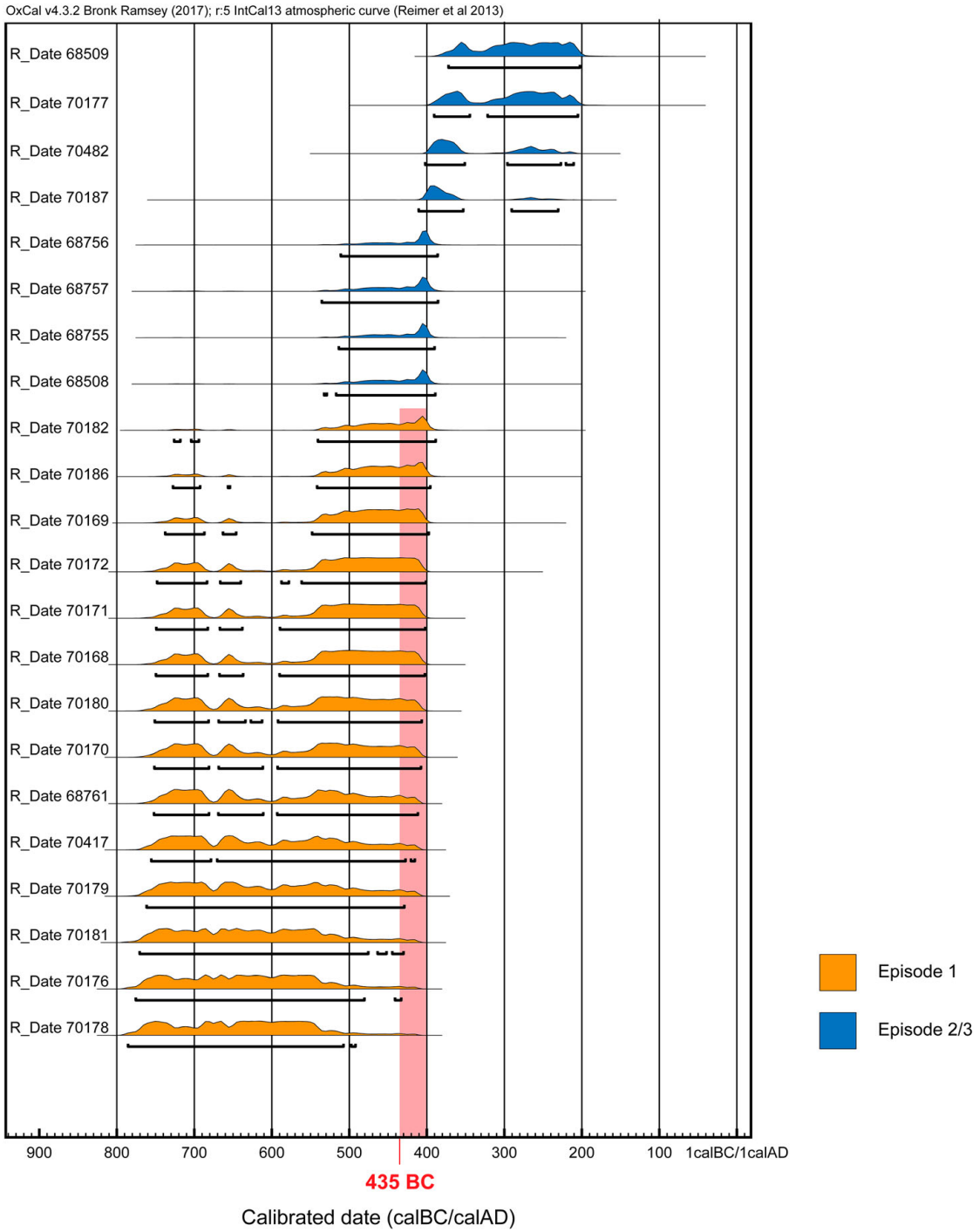

Figure 13. Radiocarbon dates from ST2. The dendrochronological date of construction is shown and the likely span of occupation is indicated by the red bar.

stratigraphic and dendrochronological evidence was incorporated into the Bayesian modelling of the radiocarbon dates, which proposes the occupation of ST2 spanning *5–40 years* (*95% probability*), and probably *15–35 years* (*68% probability*) (Figure 14). Thus ST2 was probably occupied for a generation at most; within that time, the hearth, entrance and floor surfaces were refurbished twice. It was abandoned by at least *circa* 400 BC, if not earlier. The dendrochronological analyses have also established that neighbouring ST1 was built in the same year as ST2. The ash, hazel and alder from both structures were felled in the same year.

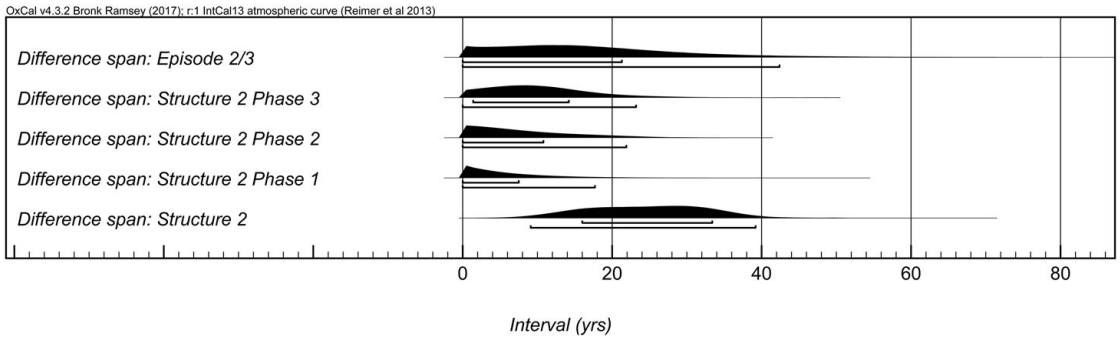

Figure 14. Bayesian model of C14 dates for the three activity phases of Structure 2. Calibration ranges of each determination are shown in outline, with the modelled probability of each date shown in the dark portion of each range.

Where Bayesian modelling of radiocarbon dates is feasible it is revealing the same pattern of short duration of roundhouses at other later prehistoric settlements. At Broxmouth, the roundhouses of the mid-1st millennium BC Phase 1 settlement, probably had average lifepans of 15–27 years (Armit and McKenzie 2013, 39), while the settlement at Kilton Thorpe Lane, Cleveland which comprised 10 roundhouses was probably not occupied for more than 40 years (Hamilton 2016, 227–229).

Occupation

A suite of analyses (of the insect and macroplant assemblages, soil micromorphology and faecal steroids) have been used to characterise the deposits in ST2 and have provided evidence for environmental conditions within the house and the differential use of space. The overriding impression garnered from these analyses is the degree to which the space was kept clean.

Environmental Conditions

The active floor surfaces in Phases 1 and 2 consisted of highly compacted layers of plant material which usually comprised a mixture of sedges, rushes and bracken, the composition occasionally varying and perhaps reflecting seasonal availability. Preservation of the plant material was so good that in one flooring context it was possible to observe the tightly curled fronds of bracken overlain by more open/mature fronds suggesting that one was laid in the early spring, the other later in the season. Soil micromorphology suggests that the soiled surfaces of these floors were frequently stripped off and fresh litter laid down, evidenced by lenses of decayed litter lying below fresher material, and thin lenses of domestic debris and mineral matter trampled inbetween the layers.

The removal of soiled litter and the replenishment of the surfaces with fresh plant litter was undoubtedly undertaken for reasons of hygiene but fresh litter may also have been brought in to raise the permanently-moist ground surface of the structure, as it sunk into the peat. The excellent preservation of much of the plant litter suggests rapid accumulation within a damp, probably periodically water-inundated structure. There is micromorphological evidence for fluctuating water levels, while spatial variations across the same context suggest that there may occasionally have been puddles into which thin lenses of mineral matter were washed. Insect taxa associated with dry, mouldering vegetation

and wet, putrid vegetation in the same contexts also suggests alternating dry and wet conditions underfoot.

Regular cleaning and replenishing of the surfaces within the house is also suggested by the relative paucity of anthropic indicators in the sampled contexts. Fuel residues and food processing waste were concentrated in the hearth deposits, as one might anticipate, but they were only present within the floor deposits in small quantities. But it is the contrast between the frequency of proxy indicators for human and animal faecal waste and the absence of its physical presence, in the form of coprolites and/or food residues that had passed through the gut which hints at routine cleanliness. Faecal steroids were detected in almost every floor deposit, in varying quantities and reflecting varying sources, while insect fauna associated with large herbivore dung was also present, albeit in small amounts. However, only trace amounts of coprolitic material were observed in thin-section and none was found in the macroplant assemblage, despite the preservation conditions, so the offending waste (if it ever existed within the structure) must have been regularly cleaned out. Nonetheless, concentrations of housefly (*M. domestica*) in some of the deposits indicate that occasionally conditions in the house were fetid, waste being left *in situ*.

Differential Use of Space

The outer post-ring and the connecting wickerwork screens set in the sillbeams created a clear division between a central area around the hearth and an outer annulus (the height of the screens is moot – it might have varied depending on function). There was no observed variation in the types of flooring material used in the central and peripheral areas but there was a difference in terms of the quantities of anthropic indicators found in the floor deposits of each area, both in thin-section and in the bulk samples. All of the artefacts were found in floor deposits in the central area (see below) and in general, these deposits also contained greater quantities of fuel and food waste than those in the outer area; indeed, the Phase 1 and 2 floors in the outer area ([221A] and [221B]) contained no traces of fuel and food waste. This suggests that either the outer area was kept significantly cleaner than the central area, or that little or no dirt was trampled in, perhaps because different activities took place in this zone (see below). However, this is somewhat at odds with the faecal steroid analyses; while there is a more persistent faecal signal around the hearth there is nonetheless a faecal signal in the perimeter deposits too. These signals suggest the presence of faecal waste from pigs, ruminants (cattle, sheep/goat), and humans and/or horses (the steroid profiles obtained from ST2 did not contain sufficient evidence to distinguish between these sources).

One of the ongoing debates in roundhouse studies concerns the stabling of animals within the house. It has been argued that the ring-ditch, the penannular depression which commonly distinguishes many roundhouse plans, was created by the overwintering of livestock (Pope 2003, 255–256, 2007, 219–220), through trample and constant mucking out. The occupants of ST2 probably raised both cattle and sheep/goat (see below) but, despite the faecal signals it is unlikely that animals were ever stabled in ST2. Stabling deposits have characteristic micromorphological characteristics, ie phytolith layers and phosphatic accumulations (Shahack-Gross 2017), and these were not observed in ST2, nor is there any evidence in the macroplant assemblage for stabling waste in the form of hay or cereal straw. Beetles typically associated with dung were present, but not in

the quantities that would be expected from stabled animals. Stable flies were also present but only enough to suggest that there were mammals in the general vicinity. There are also practical reasons why animals would probably not have been stabled in the house; the damp conditions would not have been ideal for the health of hoofed animals which are prone to foot rot in such conditions (Winter 2004, 53). Hoofed animals would also have trampled and broken up the wickerwork sub-floors yet these have remained intact.

There are many possible explanations for the faecal signal throughout the structure which do not require the presence of animals. It could have been brought in as trampled dung or human waste, the solid matter being regularly cleaned out leaving little but the signal. Dried animal dung could have been used as fuel; this would explain the enhanced signal around the hearth. Dung may have remained in the stomachs of slaughtered animals which were then brought into the structure for cooking and consumption. It is also possible that young or injured animals were brought in and penned close to the fire while they strengthened, their dung thus contributing to the signal. Lice were also found in deposits in the central area; these could have come from animal skins but they may also have dropped off young animals.

The combined evidence from ST2 thus suggests, not surprisingly that the central area around the hearth was where much of the activity took place, artefacts being discarded there and food and fuel debris being trampled more frequently into the floor surfaces. The outer annulus was kept relatively clean and free of domestic refuse; this area was in all likelihood reserved for sleeping and storage.

Activities

Despite the excellent preservation within ST2 evidence for the kind of activities that took place within it is limited, probably because the house was regularly cleaned out during occupation (see above) and upon abandonment (see below). The artefact assemblage from Phases 1–3 consists only of cobble tools, comprising pounders, grinders, rubbing stones, a smoother and a quern fragment. These were general-purpose tools used for abrading organic and inorganic materials and could have seen use in food preparation as well as various craft activities including preparing raw clay for potting and grinding pigments. They are concentrated in deposits around the hearth, presumably discarded there after limited use.

Cooking and food processing took place around the hearth. Small fragments of burnt animal bone, some of which could be identified as cattle and sheep/goat, were found in deposits of hearth debris, presumably having been thrown onto the fire after consumption. The cereal assemblage was dominated by wheat, primarily emmer/spelt (*Triticum dicoccum/spelta* L), but also emmer (*T. dicoccum* L) and bread/club wheat (*Triticum aestivum*-type), with barley, including hulled barley (*Hordeum vulgare* L) and naked barley (*Hordeum* var *nudum* L) also present. Both carbonised and waterlogged caryopses were found, the waterlogged material coming only from floor deposits, where they had presumably been spilt on their way to the hearth. Chaff was also recovered so it is possible that grain was being processed by parching over the hearth. Hazelnuts were consumed, and raspberry (*Rubus idaeus* L), blackberry (*R. fruticosus* agg) and sloe (*Prunus spinosa* L) may also have constituted foodstuffs, although they occurred in such small quantities that they may also have come into the house in dung.

Disuse/Abandonment

Although the focus of settlement later moved to the southern half of the island (see *Context* above), the northern half continued to be used after ST2 went out of use. There are features and deposits lying over its footprint which produced radiocarbon dates spanning the 4th to 3rd centuries BC (Figure 13 – see Episode 2/3 dates), but the duration between disuse of ST2 and re-use of the area will remain uncertain until we have obtained dendrochronological dates for these later episodes. Nonetheless, it raises the issue of ST2's fate; was it allowed to fall into disrepair, the roof falling in and the posts rotting, or was it deliberately dismantled, to free up space on the naturally restricted acreage of the island? The evidence suggests that neither of these scenarios is entirely appropriate.

The bases of the posts and walls had obviously remained *in situ* so the structure was not entirely dismantled but there is evidence to suggest that a controlled burning event may have signalled the end of its life. The tops and inner faces of the planks on both sides of the entrance, as well as the tops of the posts in the eastern entrance terminal, were all charred, as was the radial log forming the eastern side of the Phase 2 entrance at its junction with the plank wallfaces (Figure 15). Within the cavity of the outer wall there were large quantities of carbonised withies, brushwood and plant remains. There is no evidence of burning within the interior or the entrance, apart from the charred tops of a few Phase 3 timbers and some of the trackway logs abutting the outer wall. This suggests that fires may have been set and contained within the outer wall. It also implies that, by the time the fire was started, the roof and the upper parts of the walls and posts had either been removed or had rotted down because there is no evidence, in the form of a charcoal horizon across the footprint of the house, to suggest that there had ever been a major conflagration. At one of the Iron Age farmsteads on the Assendelvers Polders in the Netherlands, some of the roof supports had been chopped off prior to abandonment, presumably to salvage usable timber (Therkorn et al. 1984, 365). The authors pointed out there that the roof would have had to have been dismantled before this could happen and this could also have occurred at Black Loch.

In this context it is interesting to note the dendrochronological evidence for tree felling over 2 years prior to the construction of ST2. Brooks (1993, 179–180) observed that in some Native American tribes, permanent abandonment was planned up to 2 years in advance to ensure that all necessary materials could be obtained for the construction of the new house. The limited artefact assemblage indicates that valuable and usable possessions had been removed, leaving only those one-off tools which had already been discarded; again this suggests a controlled and permanent withdrawal. The evidence from BLM is thus consistent with the growing evidence from later prehistoric Britain that the abandonment of structures was a planned event (Pope 2003, 363, 2007, 208).

Summary & Discussion

Duration & Seasonality

Over the last 20 years or so there has been a move away from the *long durée* view of prehistoric settlement as static and long-lived to a more nuanced understanding that settlement can be episodic, discontinuous and short-lived (summarised in Crone 2012, 163). For the Iron Age in Scotland '… the assumption is [now] of shorter, perhaps generational

duration for the occupation of a building, unless demonstrable otherwise' (SCARF 2012, 53). Nowhere is this more convincingly demonstrated than at ST2. The chronological evidence has defined a maximum range of 30–40 years at most for its use, from construction to abandonment, but it may have been occupied for considerably less. For instance, there is no evidence that any element of the superstructure, apart from the entranceway, was replaced or repaired and given that many of the vertical components were seated in peat, and that high water levels were occasionally a problem in and around the house, one might have expected to see decay at the ground surface sooner than that observed in dryland reconstructions of roundhouses, ie within a decade (Pope 2003, 333–336).

One possibility is that ST2 was occupied seasonally or intermittently. There were two major phases of modification after the initial construction, in which the entrance was refurbished, and the hearth sub-floor rebuilt each time. It is not hard to imagine that the refurbishment of the floors would have become necessary because of the wear-and-tear and dirt of daily use, but the hearth and entrance were sound, substantial constructions, and it is clear from the surviving remains that in each case the earlier hearth and entrance were in good condition, so why replace them? The hearths would have required significant effort to bring the massive stone slabs and boulders used in their construction (Figure 10) on to the island and into position. The weight of the hearths was such that they had sunk into the peat (Figure 6) so rebuilding may have been necessary to relevel them, and this may also have been the issue with the heavy entrance framework. An alternative explanation is that these refurbishments were not prompted by necessity but were seen as a ritual act of opening, of spring-cleaning when returning to the island on a seasonal or episodic basis. At Cnip on Lewis, Armit (2006, 240–242) saw the replacement of hearths and floors in his Structure 4 as ritual acts of closure, burying the old, but they could as readily be seen as acts of renewal, re-establishing presence after a period away. It is thus feasible that ST2 was only occupied for as little as three years, the floors, hearths and entrance as being refurbished each year.

At the only other similar wetland sites that have undergone detailed study there is evidence of episodes of abandonment, at Cults Loch 3 crannog (Cavers and Crone 2018, 131) and Buiston crannog (Crone 2000, 110). This could well have been seasonal; it is not difficult to imagine that living on the island in Black Loch over the winter could have been miserable, and probably at times not even possible, if water levels were to rise. The chronological analyses have defined a maximum span of 30–40 years within ST2 was used but within that span we cannot determine whether the sequence reflects seasonal occupation over only three consecutive years or whether occupation was more erratic, with episodes of occupation and abandonment of variable length. We may eventually be able to achieve finer chronological resolution, if it becomes possible to construct tree-ring chronologies from the short-lived components of the wickerwork sub-floors for instance (see Daly 2014). The plant litter floors above them contain even further multiple mini-episodes of refurbishment but these could have been at the scale of only months or even days, as some of the macroplant evidence suggests (see above).

Both the scale of the roundhouse and the investment of labour that must have gone into acquiring the materials and then transporting them onto the island for its construction suggests to the modern mindset that the building was intended to have both permanence and longevity (see Reynolds 1995, 24). But what if ST2 was only ever intended to be a temporary, short-term structure, despite its perceived (by us) monumental aspect?

Figure 15. The plank walling of the outer wall at its junction with the entrance. Charring on the inner faces is visible. In the foreground the radial defining the lefthand side of the entrance is also clearly charred.

Perhaps it was the act of construction and refurbishment that was significant to the community, as Fredengren (2002, 242) has suggested when discussing Irish crannogs, binding the community together through communal effort. This bears upon the function of the structure, and of the settlement; ST2 has all the attributes traditionally ascribed to a domestic dwelling and must have been lived in for periods of time, however short, so perhaps it was the status of the inhabitants that was special, or the status ascribed to the settlement

by the larger social context within which it functioned. This disjuncture between the apparent status of the settlement and the possible status of the occupants is a familiar theme in the archaeology of Iron Age Scotland. As Harding puts it, 'the facile inference that the chief's house should be larger than the rest seems to be based on an entirely anachronistic consumer-capitalist conception of status' (2004, 292).

At Cults Loch we explored the functional reasons for constructing a crannog in the loch there and concluded that there were no obvious explanations (Cavers and Crone 2018, 235–237); the same arguments apply to BLM. Cults Loch 3 and BLM are near-contemporary; BLM was constructed in 435 BC and Cults Loch 3 was constructed between 438 and 412 BC (ibid 37). Cults Loch 3 could have been constructed in the same year as BLM or at most a decade or so later. Their contemporaneity suggests that the crannog and the island settlement, which lie only 30 km apart (Figure 1), represent different, though closely related, architectural expressions of the same society, rather than diachronic site types, as they might hitherto have been interpreted. What this suggests is that it was either expedient or important for at least some element of the community to live out in the wetlands, in whatever type of settlement they could build, be it on a natural island or on an artificially constructed island. Watery contexts appear to have been particularly venerated in later prehistory (Bradley 1990) and Cavers (2006, 2010) has suggested that living out on the water could be seen as 'domesticating' a ritually charged environment, combining the spiritual and practical spheres of life. Perhaps the occupants of these settlements were that element of the community, a priestly group perhaps, designated by the community to act as their intermediaries in this sphere. If so, then there was nothing material to distinguish them from the rest of the community, at least which survives in the archaeological record. The house design, the artefact assemblage, the evidence for cultivating, cooking and consuming are all consistent with the evidence from dryland settlements. More consonant with evidence from elsewhere in Iron Age Scotland, perhaps, is the view that symbolism and ritual were not mutually exclusive with domesticity and agricultural practice (eg Hingley 1992), and that powerful locations such as wetlands, coastal boundaries (in the case of promontory forts) and below ground environments (in the case of souterrains) were all incorporated into the design of many Iron Age settlements.

One key question raised by Pope (2003, 332, 342) in her review of the Iron Age roundhouse is whether wetland sites can be used to interpret and understand their dryland equivalents. This issue has been fundamental to the research design underlying the Scottish Wetland Archaeology Programme, and to the approach taken to the study of lake dwellings within their social geographic context (Cavers and Crone 2018). It is our view that by acknowledging the close integration of powerful symbolism into Iron Age settlement design it is possible to see beyond the apparent illogicality of choosing to live in a marshy, boggy environment. Wetland settlements afford the opportunity not only to understand better the mechanics of late prehistoric building life-cycles, but also to glimpse the intentions and world view of their occupants.

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